CENTRAL INTELLIGENCE AGENCY

INFORMATION REPORT

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SUBJECT Work on Radar Development and Guided Missiles at NII 49, Leningrad

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25 YEAR RE-REVIEW

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IV. APPENDICES

Appendix 'A'

Chemical Warfare and Biological Warfare - No information.

Appendix 'B'

Guided Missiles - See separate sheets attached.

Appendix 'C'

Electronics - See separate sheets attached.

Appendix 'D'

Naval - No information.

Appendix 'E'

Army - No information.

Appendix 'F'

Air - No information.

Appendix 'G'

Scientific Order of Battle - (a) Establishments - No information.
(b) Personalities - (i) German
(ii) Russian

V. ANNEXURES

Annexure 'A' - Figure 1 - [redacted] sketch of Nii 49 - LENINGRAD. 25X1
" 'B' - Figure 2 - [redacted] plan " " " "
" 'C' - Figure 3 - [redacted] sketch " Pulse Power Meter.
" 'D' - Figure 4 (a) - Truncated Paraboloid Type Radar Aerial.
Figure 4 (b) - Sketch of 2½ ton Truck carrying Radar Aerial.

Appendix 'B' to [redacted] 25X1

GUIDED MISSILES

1. The following details were [redacted] in connection with the activities of N.I.I.49 LENINGRAD [redacted] which later became known as the M.S.P. or Wissenschaftliche Entwicklungs Institut des Ministerium für Schiffbauindustrie. 25X1

(a) The "Gyro" group was engaged on work in connection with the control of the Wasserfall, Rheintochter and Schmetterling type weapons. The group was not concerned with the production of these weapons, but only with reconstruction of the various electrically operated calculating machines, or dependent sub-assemblies necessary for ballistic calculations. The group was also concerned with the design and/or reconstruction of some of the varied equipment necessary for the training of personnel operating such guided missiles.

(b) [redacted] the following equipment in the rooms allotted to the Gyro Group:- 25X1

(i) "Grosser Rechner" - electrically operated calculating machine, used informant believes in connection with the Wasserfall weapon. (This is the PEENEMUNDE Bodo or Einlenkrechner.

(ii) Taurechner (Tauwinkel) - to prevent the ground operator giving "reversed" commands to the missile that would lead to course errors and possible instability of missile.

(iii) Übungsgerät - This functioned in connection with the so-called "KNUPPEL" and enabled the operator to get experience in optical guidance.

(iv) Luftgelagerte Kreisels (Gyroscopes with air bearings.) - Gyros seen had the following flywheel diameters: 4 cm, 6 cm and 10 cm (approximately). Frequency 500 cycles per second (30,000 r.p.m.).

(v) A piece of equipment known as the S.G.X. [redacted] this constituted a gyro stabilised platform for carrying control gear inside the V2. 25X1

[redacted] 25X1

25X1

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DEPARTMENTS [redacted] AT GEMA (Under Russian Occupation) 25X1

- Russian Chiefs - JEGEROV, - GRUDNITZKI (N.I.I. 400 present chief)

a GROUP dealing with MARINE problems (Mines, torpedoes etc.) Dr. CROCKMAN

a GYRO GROUP recruited from the firm of KREISELGERÄT, who in GEMA were mainly concerned with Target predictor gears. CHIEF - Herbert MUMMERT

a GROUP under Prof. KLOSE [redacted] 25X1

a CONTROL GROUP Under Dr. BUSCHBECK which dealt with control problems in general, and probably with Television

[redacted] 25X1

H.F. GROUP

WILKE - Defected to West before deportation

- Deputy - GERTZ - (Ex TELEFUNKEN)

H.F. MEASURING EQUIP. LAB.

REHBOCK EQUIP. LAB (Artificial Radar Target)

Dr. BOSSE

HUTTMANN

[redacted] 25X1

Deported to Russia [redacted] 25X1

THÜNNESSEN
DRAHEIN
REICH

FREQ. MEAS. LAB.

WENDT

VALVE LAB

WILDE

25X1

25X1

8. On the 22nd October 1946 all the GEMA personnel was deported to Russia. 25X1

9. ARRIVAL IN RUSSIA

N.I.I. 49 situated in Hospital Strasse (Saratov Prospect). (See Figures 1 and 2). 25X1

10. THE INSTITUTE (N.I.I. 49 - LENINGRAD) (Figure 1) RUSSIAN HEAD - Ing. TSCHLREN

the Institute consisted of two three-storied buildings inter-connected by an overhead (first floor) corridor. The Russian personalities were of a high technical standard students were being trained there and the building contained lecture rooms and laboratories. The front entrance led to the Hospital Strasse, and on the other side of the street were a number of private houses together with a repair garage. prisoners of war were carrying out building operations on this site. By the time the Germans left, the whole of the block facing the Institute, had been transformed into a sort of factory producing radar equipment. This factory formed an organic whole with the Institute, and the whole complex employed 2 - 3000 people, of which however not more than 1/3 were artisans. 25X1 25X1 25X1

11. The Institute (a former hospital) was known as N.I.I. 49 but during 1951, the number fell into disuse, and the institute was referred to as The Ministry For Ship-building Industry (Ministerstvo Sudostroitel'noy Promyshlennosti) or more usually as the M.S.P.

the KREISELGERAT and A.E.G. firms had carried out substantial orders for the Russian M.S.P. before the war. It is probable that during this period, the institute dealt mainly with ship radar and ship gyro stabilisation.) 25X1

12. the Institute consisted of three departments as follows:- 25X1

Department 1 - Administration and secret department (ground floor).

Department 2 - Gyros (first floor)

Department 3 - Radar (Top or 2nd floor)

25X1

25X1

25X1

15. DETAILS OF INFORMANTS OWN WORK IN THE RADAR DEPARTMENT (refer also to Appendix 'C')

the work done by the Russians was in accordance with a set plan, but the Germans were used in a haphazard manner.

about eight Russians occupied one room in the Radar Department. Only paper work was done at first, since they practically had to start from scratch, no equipment being available.

25X1

16. The first task was to design a H.F. performance meter. The instrument was then manufactured by the Russians in their experimental workshops, (to which the Germans had no access)

Other work carried out during the period (November 1946 to Spring 1949) was:-

25X1

25X1

(a) Stabilization of 10 cm transmitter

(b) The building of a 10 cm and 3 cm standard signal generator,

25X1

(c) The design of a protecting circuit for impulse overload on an amplifier ordered by SVEDLANA.

25X1

During the same period, THUNNISSEN had to design a heterodyne performance meter and a valve test gear.

17. THE RADAR DEPARTMENT

The Russian head of this department was Ing. SLATKIN, and he controlled Russian technicians of high technical ability.

the department had a dual function, viz:-

25X1

(a) The development and test of Radar accessories

(b) A training establishment

18. The following laboratories were contained within this department, together with lecture rooms:-

(a) Laboratory for Amplifiers under GRIGORIEV

(b) " " Aerials " Nina ANATOLIENJA

(c) " " Impulse equipment under VILENKIN

(d) " " Electronic measuring equipment under SLATKIN

(e) An experimental workshop

The staff amounted to 50 - 60 people, not counting the workshop.

25X1

25X1

20. THE GYRO GROUP

The group were allotted six rooms 25X1
occupied as follows:-

Room 1 - Russian Head - KLARITZKI
German Head - MUMMERT
and interpreters

Room 2 - Dr. BÖGEL - Mathematics
Dr. KINDLER - Amplifiers and main. development of Wasserfall equipment } Ex GEMA
- LAEKMAEKER - Circuit design

25X1

RUDLIN, Ing. - ex BLEICHERODE
ROST - Committed suicide

Room 3 HESSLER, Ing
WOLTER
BIELEKE
ENDERT
GOLLERT } Electronic development engineers
BAUER, Ing

Room 4 NÜRNBERG - Gyro design (Taurechner designs)
ADLER - Small motor designer
THUNNESSON - H.F. and weak current engineer
ZENHOV - Russian technician

Room 5 LANGENBACH - Chief designer - very capable
ROTHER -
BOEHM - } Good designers
BACHER -
NIELBOCK - Chassis designer

Room 6 Frau ENDERT - Typist
and Russian typists who changed frequently

25X1

21. the KREISELGRUPPE.
had been employed at GEMA in reconstructing the Grosser Rechner, a large calculating machine produced towards the end of the war by the firm KREISELGERÄT A.G. for the flight control of Wasserfall or Rheintochter. 25X1

This calculator was not finished when the Germans were evacuated from GEMA and

the calculator was finished in 1948 25X1
and after some adjustments was sent away to some unknown destination early in 1949,

25X1

this calculator

25X1

consisted of 8 components housed four a side in a frame structure about 2 m. high, 1.5 m. wide and 1 m. deep.

In addition to the Grosser Rechner, the group had been busy on other target predictor gear,

25X1

the standard of the Russian engineers who were in charge of the KREISELGRUPPE as being considerably inferior to the corresponding supervisory members in the H.F. group.

25X1

NOTE: It is clear that the Grosser Rechner is the Waserfall Bodo or Einlenkgerät which forms the automatic (KNUPPEL) part of the Burgund Control system.

22. EQUIPMENT

25X1

Grosser Rechner -

(a) At least one was made and sent away by the Russians, presumably for test. The equipment was never seen again, and the German group had no knowledge of the test results.

Taurechner

25X1

"the Taurechner automatically shifts the position of the KNUPPEL control axes, so that the proper commands are given irrespective of the orientation of the missile along its longitudinal axis (back to front position)".

25X1

Without such a device, it would be impossible to give the correct (3 dimensional) commands from a purely optical sight (2 dimensional picture).

the original PEENEMUNDE Taurechner did not incorporate gyros. The KREISELGRUPPE constructed an alternative design, incorporating a "controlled gyro" (gestutzter KREISEL) at the request of the Russians.

25X1

The group were apparently surprised to find that the Russian type worked equally well.

25X1

Übungsgerät

(c) In order to train observers in the handling of the KNUPPEL, a "teacher" was designed by the Germans. This consisted of a hemisphere on which two optical images could be projected, representing the target and missile respectively. The former could be made to travel on a set course, whilst the missile spot could only follow the KNUPPEL control movements with certain delays governed partly by the homing curve as calculated by the Einlenkgerät, as well as the aerodynamic characteristic of the rocket.

The object of the training device is to cause the operator to cause the 2 spots to coincide as quickly as possible and to maintain coincidence as long as possible.

25X1

[redacted] The apparatus consisted of a section of a hemisphere of 3 m. radius, with an opening angle of about 45°, the observer table with ANUP.EL being at the centre. [redacted] the Germans questioned the utility of the device.

25X1

25X1

(d) Three types of gyros with air lubricated bearings; the three approximate diameters of the respective rotors were:-

4, 6 and 10 cms. Operation speed (500 cycles) 30,000 r.p.m.

(e) An item of equipment known as the S.G.A. or S.K.X. [redacted] consists of a small box which contined a few gyros. [redacted] these constitute stabilised platforms for the automatic pilot inside the V2. [redacted]

25X1

25X1

23. DETAILS OF INFORMANT's OWN WORK IN GYRO GROUP

After the group had returned from leave in the summer of 1950, they found that their rooms had been moved to offices in the production complex (Figure 2). They were still considered as the KREISEL group, and continued with the same type of work until the 5th October 1951, when the work of the group ceased, and they were left to their own devices. [redacted]

25X1

[redacted]

25X1

25X1

25X1

26. ACTIVITY IN THE PRODUCTION COMPLEX

other buildings in the complex, 25X1
many chassis and boxes of aluminium being despatched from the factory. These boxes could have been chassis and containers for electronic equipment. identified some of the cases as amplifier housings. some wave guides "Hohlrohr oder Wellenleiter" (about 300 units - these units were handled by Militia troops with blue caps and were intended for the M.W.D.) 25X1 25X1

27. The following buildings were identified there:-

Workshops
Carpenters shop
Arc welding shop
Either a spray shop or plating shop

the complex possessed a high precision drilling machine (Lehren Bohrwerk). 25X1

25X1

Appendix 'C' to [redacted] 25X1

ELECTRONICS

1. [redacted] in NII.49 LENINGRAD, KLARITZKY [redacted] was in charge of all the Germans there. [redacted] 25X1
[redacted] in the Measuring Instrument Laboratory on the 25X1
2nd floor of the development building, [redacted] tasks 25X1
[redacted] were as follows:-

(i) Frequency stabilisation of a 10 cm TX which employed a lighthouse tube oscillator. [redacted] for this task a conventional discriminator circuit. 25X1

(ii) Development of a pulse-power meter, for use at wave-lengths of 1 - 5 m (See Annexure 'C').
Also development of a simple power meter for 10 cm employing a thermister for negative pulses and a balometer for positive pulses.

(iii) Development of a conventional standard signal generator for 10 cm.

(iv) Development of a method for protecting R.F. amplifiers from being driven into grid current by incoming high power pulses. This method was to arrange the R-C output of a negatively driven triode, as a potential divider and so cut down the useful positive pulse output.

(v) Development of a method for measuring the dielectric constant of solids and liquids. [redacted] Vol. 11 of the MIT series supplied the technique for this development. 25X1

[redacted] 25X1

In October 1951 all official work ceased.

3. In 1951 [redacted] saw a 2½ ton truck (Annexure 'D') with box body 25X1
standing in Hospital Street, the walled-off street between the Development and Production buildings. On the roof of the truck was a radar aerial consisting of a truncated paraboloid made of medium mesh wire netting, fed by a ware-guide of rectangular cross-section. The dimension of the guide indicated the use of 10 cm. On several other occasions, usually at intervals of 3 to 6 months, [redacted] saw similar trucks standing in 25X1
Hospital Street, but always without antennae. On one occasion, the back double doors were open, and [redacted] saw what appeared to be Russian-copied 25X1
[redacted] radar equipment on benches round the inside of the box body. Under the benches were rotary converters and generators [redacted] 25X1
[redacted] the production side of NII.49 dealt only with prototype production, [redacted] the trucks 25X1
[redacted] contained experimental or prototype equipment. On the roof of the Development block, there was a radome of opaque material which [redacted] was 40 cm diameter and 50 cm high. The 25X1
estimated number of personnel employed at NII.49 is from 2500 to 3000; mostly engineers and scientists.

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Apperdix 'C' tp

[redacted] 25X1

GENERAL

[redacted] KAUFMANN, KOTOWSKI, AMMON, FEUSNER in ENGELS Prospect. 25X1

[redacted] from 1945-1949 KOTOWSKI and KAUFMANN worked on LORAN and probably built a chain. 25X1

Since 49-50 KOTOWSKI, KAUFMANN and FEUSNER worked in the TV Institute 380. KAUFMANN on the theory of the flip-flop circuit and KOTOWSKI building signal generators.

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Appendix 'G' (b)(ii)

25X1

Page No. 2.

25X1

NAME	GROUP	Still There with/without Family	Returned with/only Family	QUALIFICATION
HEINZERLING	"	X		Dr. Mathe
JOHN	"	X		designer
GRAEFE	"		X	
GLODE	"	X		
KOLL	"	X	X	
LAWITSCHKA	"	X	X	
SIMMEL	"	X.	Daughter only	
MACKBACH	"		X	
FROMNITZ	"	X	X	
MARTIN	"	X		
DILL	"		X	
DÜRING	"	X	X	
MYSLIWETSCHEK	"	X	X	
MAGERSTÄDT	"	X	X	
GRAHMÜLLER	"	X	X	
von LÖWIS	"	X	X	
SEDLER	"	X		
BÖSE	"	X		
SCTATESCNY	Blankenburg Werft	X	X	Dr.
MENSSEN	"	X	X	designer
KEPPEL	"		X	"
SCHUHMACHER	"		X	"
KRAGE	"		X	"
TROMPKE	"		X	"
WEISENBURG	"		X	"
NAD or NOTHAUS	"	X		"
DETTKE	"		X	mechanic
HOLLER	Machatschk	X		Dipl. Ing
VALERIUS	"		X	
KOTOWSKI	OSW	X	X	Dr.
Hans KOTOWSKI	"	X	X	Ing.
AMMON	"			
KAUFMANN Hans	"	X		Dr.
FEUSSNER	"	X	son only	
GROSS	"	X	X	Dr.
SMEYKAL	Sestroriezk	X		Dr.
PEINTZE	"	X		
KAUFMANN	"	X		Dr.
STRAUBE	Tschemilovka/ Jena	X		
DIETRICH	"	X		
JOHN	"	X		
KRESSE	"	X		
KÜHNE	"	X		Dr.
FRIEBE	"	X		
RODE	Unknown		X	Mechanic
FISCHER	"		X	"

Not part of 1946 Deportation

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SECRET

Appendix 'G' (b)(i&) to

25X1

SCIENTIFIC ORDER OF BATTLE

PERSONALITIES - GERMAN

25X1

NAME	GROUP	Still There with/without Family	Returned with/only Family	QUALIFICATION
KINDLER	Nii-49		X	Dr.
BÖGEL	"		X	" Maths
WOLFF	"		X	Dr-Physicist
MUMBERT	"	X		Ing.
LAENGERER	"		X	Montage-ingenieur
TIEDE	"		X	Ing (Development)
NÜDLIN	"		X	Dipl.Ing.
RUTHER	"		X	Ing.designer
ADLER	"		X	Ing.
EBERT	"		X	development engineer
GOLLERT	"		X	Ing.
BÖHL	"		X	Ing.
DIELSCHE	"		X	Ing. (development)
NÜRNBURG	"		X	Ing.
LANGENBACH	"	X(son)	X	Ing.
WOLTER	"		X	Ing.
BACHER	"		X	Ing.
HESSLER	"		X	Ing.
BAUR	"		X	Ing.
NIELBOCK	"		X	Ing.
THÖNESSEN	"		X	Ing.
BROCKLANN	Nii-400	X	X	Dr.
SCHIEDECK	"		X	Dr. (Maths)
Frau LANGE	"		X	Secretary
LÜBCKE	"		X	Prof. Dr.
GUTSCHE	"	X		Dr.

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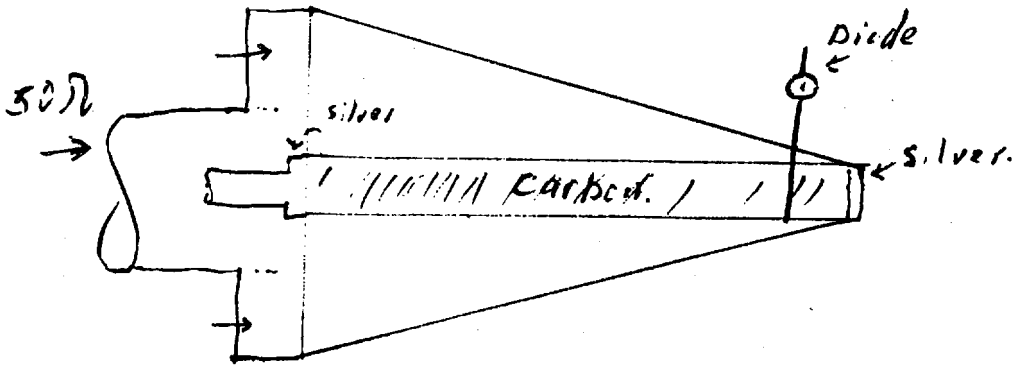
ANNEXURE 'C' (5)

25X1

Fig 3

Pulse power meter.



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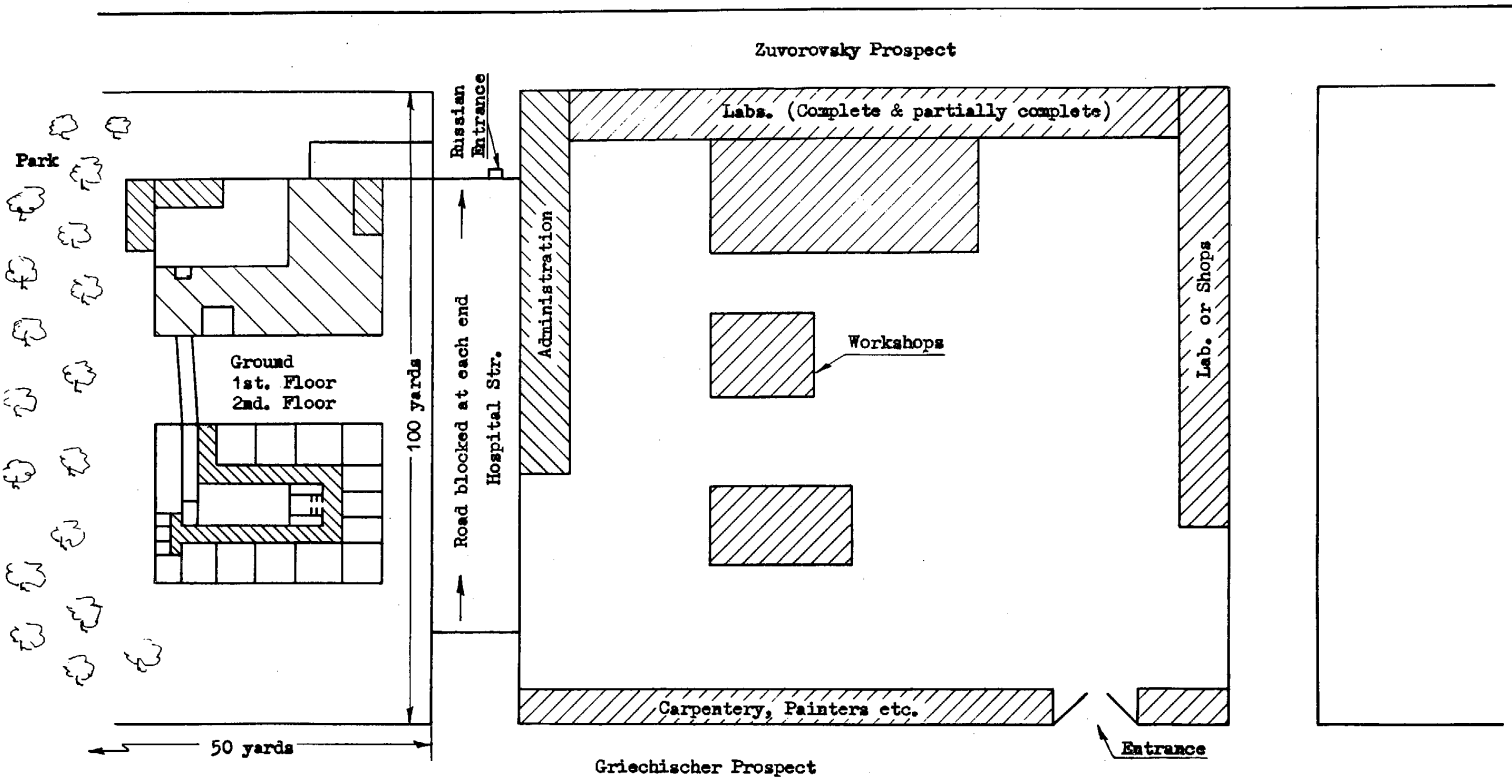
ANNEXURE "B" to [redacted] 25X1

FIGURE 2



[redacted] PLAN SKETCH OF Nii 49 25X1

25X1

FIGURE 1

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[redacted] SKETCH OF Nii 49 - LENINGRAD

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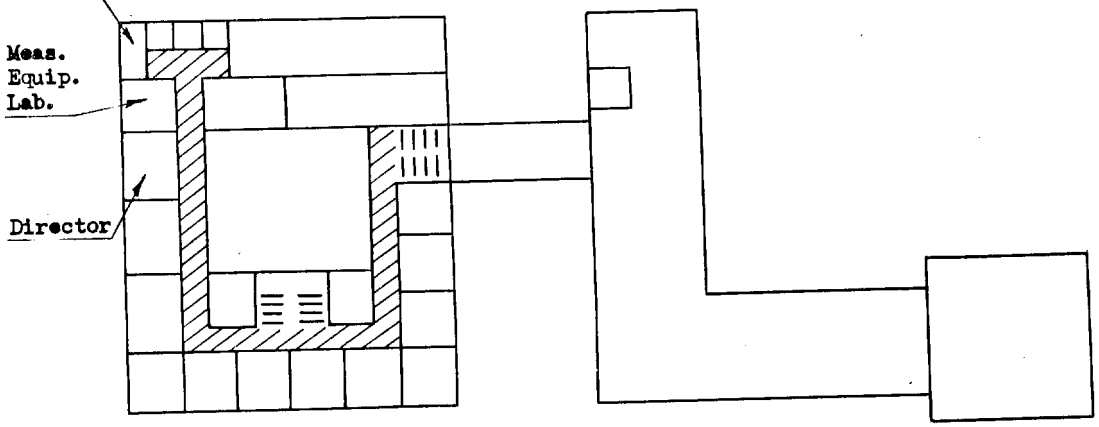

25X1

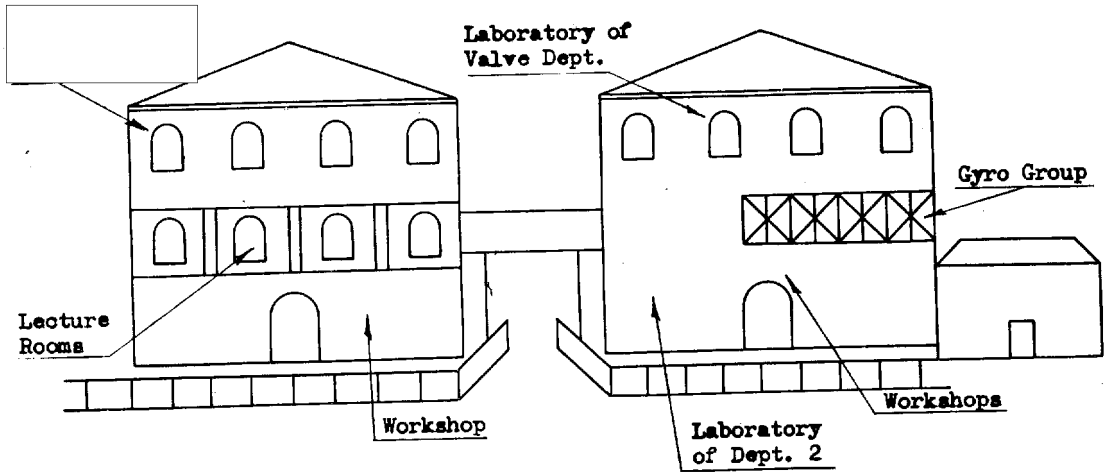

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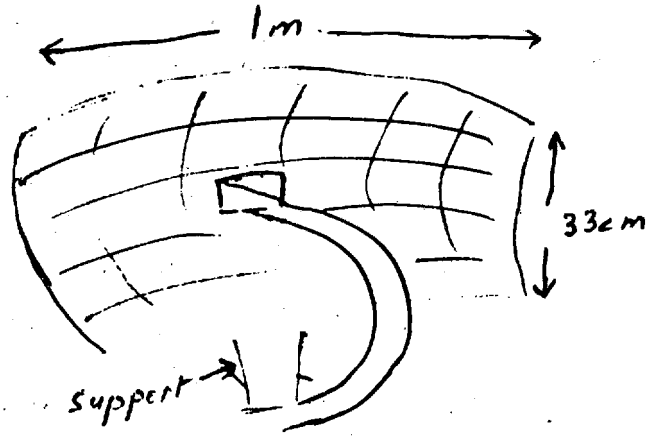
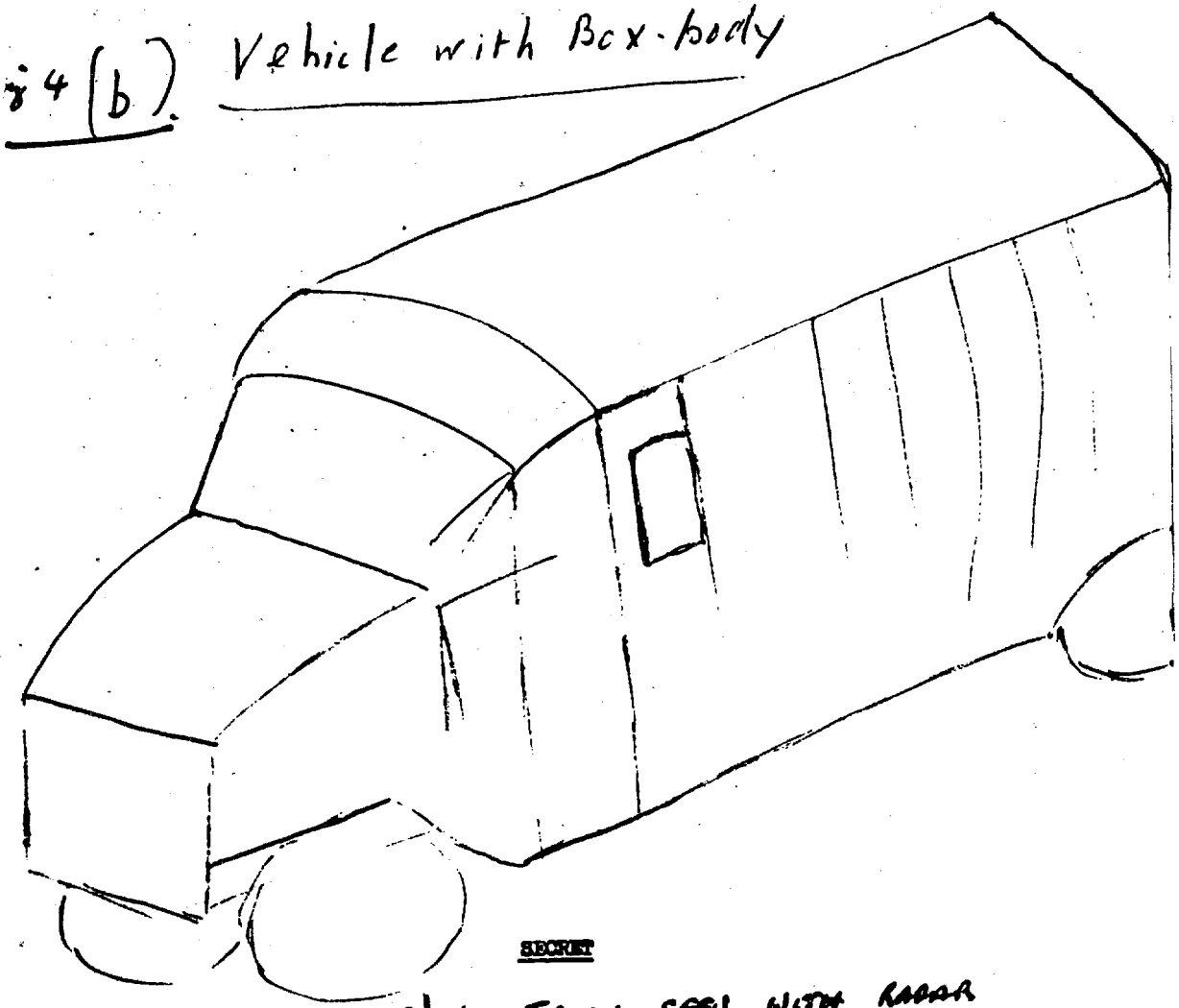
Fig 4(a) Truncated Paraboloid



SEEN ON ROOF OF TRUCK

Fig 4(b) Vehicle with Box-body



2½ ton TRUCK, SEEN WITH RADAR

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Appendix 'G' (b)(ii) to

[redacted] 25X1

SCIENTIFIC ORDER OF BATTLE

PERSONALITIES - RUSSIAN

CHARIN	-	Head of NII.49 LENINGRAD
DUBROVSKY	-	Chief engineer
SHUCHKOV	-	Personnel director - Dept. I.
ZLATKIN	-	Leader of Dept. 3.
BUISTROV	-	Head of H.F. Measuring equipment lab.
VILENKIN	-	" " Impulse " "
GRIGOROV	-	" " Amplifier and Associated equipment lab.
ANATOLEVA	-	" " Aerial lab.
PORTNOY, SHISHAGIN, FEINSTEIN, YAKOVLEV	-	Technicians employed in Dept. 3.
ZAITSEV	-	Dept. Leader - Dept. 2.
MENSHICH	-	Leader of Lab. in Dept. 2.
KLARITSKY	-	Leader of the German Gyro Group. Very bad engineer, but fairly good organizer.
FALKOV	-	Chief designer (Gyros)
Anton STEPANOVICH	-	Librarian of Institute, elderly, [redacted] 25X1

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